MATH 100 ASSIGNMENT #5 Name: _____ Section:____

First work through the recommended practice problems listed in the following table from the 11th edition of *Calculus of a Single Variable* by Larson and Edwards. You do not need to hand these in. Once you have completed these, then do the small sampling of questions below. Write full solutions (not just the final answer) in the space provided.

4.1 Antiderivatives and Indefinite Integration	5, 9, 13, 17, 19, 25, 27, 29, 31, 33, 35, 39, 43, 45, 49, 61, 67
4.2 Area	7, 9, 11, 13, 17, 19, 21, 25, 31, 39, 47, 51, 55
4.3 Riemann Sums and Definite Integrals	5, 9, 17, 19, 23, 27, 31, 39, 43, 47(a-e)
4.4 The Fundamental Theorem of Calculus	11, 15, 17, 19, 23, 25, 29, 33, 35, 37, 39, 41, 45, 49, 51, 53, 57, 59, 63, 65, 71, 73, 75, 79, 83, 85, 105
4.5 Integration by Substitution	5, 7, 9, 17, 23, 27, 29, 33, 39, 43, 45, 47, 53, 57, 61, 65, 75, 79, 93, 95, 97
8.6 Numerical Integration	7, 9, 17, 23

Sec 4.1 #26: Find the indefinite integral and check the result by differentiation: $\int \frac{x^4 - 3x^2 + 5}{x^4}\,dx$

Sec 4.2 #52: Use the limit process to find the area of the region between the graph of the function $y = 4 - x^2$ and the x-axis over the interval $[-2, 2]$. Sketch the region. Do not use symmetry of the graph.

Sec 4.3 #6: Evaluate the definite integral by the limit definition: $\int_{-2}^{3} x\,dx$

Sec 4.4 #24: Evaluate the definite integral: $\int_{-8}^{-1} \frac{x - x^2}{2\sqrt[3]{x}}\, dx$

Sec 4.4 #52: Find the value(s) of c guaranteed by the Mean Value Theorem for Integrals for the function $f(x) = \cos x$ over the interval $[-\pi/3, \pi/3]$. Round your answer(s) to 4 decimal places.

Sec 4.4 #86: Find $F'(x)$ given that $F(x) = \int_0^{2x} \cos t^4\, dt$.

Sec 4.5 #68: Evaluate the definite integral: $\int_4^5 \frac{x}{\sqrt{2x-6}}\, dx$

Sec 8.6 #6: Use the Trapezoidal Rule and Simpson's Rule to approximate (to four decimal places) the value of the definite integral $\int_2^3 \frac{2}{x^2}\, dx$ for $n = 4$. Also find the exact value of the definite integral.

$\int_2^3 \frac{2}{x^2}\, dx =$ _____ (exact) $\int_2^3 \frac{2}{x^2}\, dx \approx$ _____ (Trapezoidal Rule) $\int_2^3 \frac{2}{x^2}\, dx \approx$ _____ (Simpson's Rule)